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Black Locust

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BLACK LOCUST

(*Robinia pseudoacacia*)

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Black locust is a small to medium-sized tree widely planted throughout the United States. It is easily propagated, grows rapidly, and develops a spreading root system that is especially effective in checking soil erosion on steep hillsides. The roots of black locust, like those of other legumes, contain nodules which harbor nitrogen-forming bacteria and are commonly held to be natural soil enrichers.

The wood ranks high in strength and in ability to resist decay. Black locust is difficult to obtain in clear straight-grained pieces except in small sizes, as the trees are likely to be more or less crooked and limby unless grown under the most favorable conditions. The greatest drawback to planting black locust is the locust borer, a widely distributed beetle that burrows into the wood. In some regions the borer causes serious injury, while in others it does not thrive and causes little damage.

Three species of the genus *Robinia*, of which black locust is a member, grow in the United States. Of these, black locust is the most valuable, New Mexican locust (*Robinia neo-mexicana*) second in importance, and clammy locust (*R. viscosa*) third. New Mexican locust grows in the Southwest. Clammy locust was originally confined to the mountains of North Carolina and South Carolina but, like black locust, has been planted elsewhere and has spread from plantations. The wood of New Mexican locust and clammy locust is quite similar to that of black locust.

There is a variety of black locust *Robinia pseudoacacia* var. *rectissima*,[1] known as shipmast locust, which has a straighter trunk than the ordinary black locust. This variety is found principally on Long Island and in certain nearby localities. The opinion is current on Long Island that the wood of the shipmast locust is even more durable than that of black locust, and there are indications [2] that the tree may be more resistant to the attacks of the locust borer.

The wood of black locust is sometimes confused with that of honeylocust, waterlocust, and Texas honeylocust. These three species, whose wood is quite similar, belong to the genus *Gleditsia*—an entirely different group from the *Robinia*. Honeylocust (*Gleditsia triacanthos*) has a limited commercial use, principally for fence posts and railroad ties, but is not the equal of black locust in strength or durability. Waterlocust (*G. aquatica*) and Texas honeylocust (*G. texana*) are little used commercially.

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[1] Raber, O. SHIPMAST LOCUST. A VALUABLE UNDESCRIBED VARIETY OF ROBINIA PSEUDOACACIA. U. S. Dept. Agr. Cir. 379. 8 pp., illus. 1930.

[2] From preliminary examinations by the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

Nomenclature.—Black locust is frequently called yellow locust or simply locust. Other names less commonly used are white locust (so called from the conspicuous white flowers), green locust, post locust, and false acacia.

Distribution and Growth.—The natural range of black locust extends from Pennsylvania southward through the Appalachian Mountain region to Georgia, and includes a comparatively small area in northwestern Arkansas (fig. 1).[3] It reaches its best development on the lower slopes of the mountains, where it sometimes attains a height of 100 feet and a diameter of 30 inches. Black locust has been extensively planted in the United States and many foreign countries, and is found in practically every State in the Union. Planted in solid stands or along fence rows, it has spread widely. It does best in a deep, well-drained, fertile loam but will grow in a wide range of soils, but will not grow in excessively dry or poorly drained situations.

Under forest conditions, black locust may occur in groups or singly. On burned-over forest land it often grows in pure stands. The tree ordinarily reproduces itself abundantly by seeds and by stump and root sprouts. The rapid growth of an extensive network of roots makes black locust well suited for planting to check erosion.

Under fair conditions of growth the tree generally reaches heights of 20 to 30 feet and diameters of 2 to 4 inches in 10 years, and heights of 45 to 50 feet and diameters of 5 to 7 inches in 25 years. Under favorable conditions it requires from 15 to 20 years to grow black locust of standard post size—5 inches in diameter breast high. The trees may live for 40 years or more before showing signs of deterioration due to attack by fungi and insects. As a rule, however, they mature when 20 to 30 years old. The locust borer, of the black locust, which attacks the trees frequently damages the wood badly. This borer is present almost everywhere that black locust is grown and in some regions has caused serious injury or destruction. The best precaution against insect infestation is to plant on fairly good soils so as to produce vigorous and rapidly growing trees. It has been found also that the borers do less harm to black locust when it is planted with other trees in mixed stands.

Supply.—The stand of commercially important black locust timber in the United States was estimated in 1926 at 1,225,000 cords,[4] equivalent to approximately 368,000,000 board feet.[5] Tennessee, Kentucky, West Virginia, and Virginia were estimated to contain about 72 percent of the total stand and North Carolina and Pennsylvania together about 13 percent. The remaining 15 percent was scattered over a number of States. It is estimated that the present stand (1942) of black locust of commercial size is equivalent to about 400,000,000 board feet.[6]

Production.—Accurate figures as to the amount of black locust cut for various purposes are not available. A rough estimate made for the year 1926[4] placed the cut for fence posts at 20,000 cords and for insulator pins at 18,000 cords, with much smaller amounts aggregating 4,075 cords as the cut for mine timbers, wagon hubs, and poles. The total cut of cordwood for all purposes, including fuel wood, was estimated roughly as equivalent to 15,000,000 board feet. The cut of black locust for fence posts in recent years is probably at least equal to the 1926 estimate, but the cut for insulator pins is undoubtedly much smaller[7]—probably not more than 4,500 cords.[8] Other products,

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[3] Map is based on recent study of occurrence of strains of black locust conducted by Henry Hopp, Soil Conservation Service, U. S. Department of Agriculture.

[4] Cuno, J. B. UTILIZATION OF BLACK LOCUST. U. S. Dept. Agr. Cir. 131. 19 pp., illus. 1930. Estimate based on information obtained from a rapid survey made during World War I which brought a large demand for locust treenails. These are round wooden pins about 3 feet long and 1½ inches in diameter used in the construction of wooden vessels built under emergency conditions for transporting supplies to Europe.

[5] A cord of black locust contains 300 board feet.

[6] This estimate takes into consideration the reduced demand for black locust insulator pins in recent years, the extensive planting of the species, its rapid growth, and abundant reproduction.

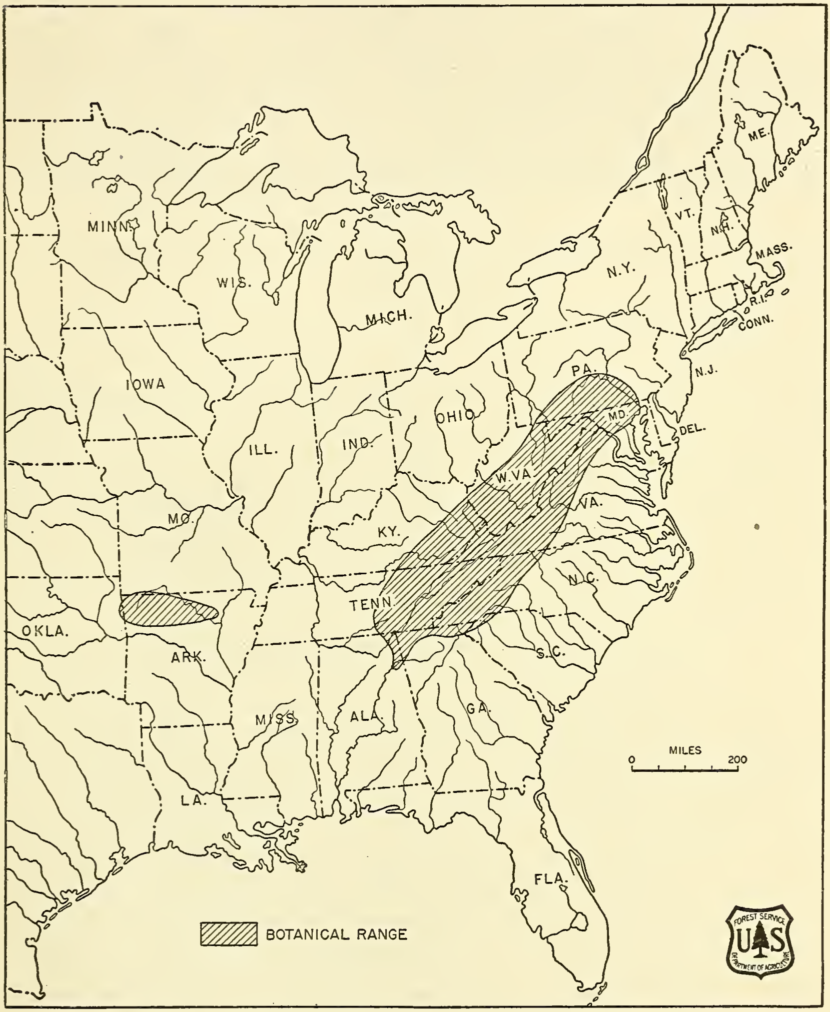

Figure 1.—Range of black locust (*Robinia pseudoacacia*).

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[7] Due to the substitution of steel pins and to the increasing use of cables and underground lines.

[8] Based on a rough figure of 4,900,000 insulator pins furnished by the American Telegraph & Telephone Co. as their consumption in 1938 and adding a small allowance for the consumption of independent companies. About 1,200 insulator pins are generally obtained from a cord of bolts.

including fuel wood, probably require the equivalent of an additional 25,000 cords. The total cut of black locust cordwood for all purposes in recent years is placed at about 27,000 cords, equivalent to approximately 8,000,000 board feet.

The recorded production of black locust lumber has been small and very erratic (fig. 2). It was the greatest in 1910 when a production of over 5,000,000 board feet was reported. In 1932, a year of business depression, the cut dropped to about 100,000 board feet. The average annual lumber production for the 10-year period 1933–42 was approximately 1,135,000 board feet. The total production of black locust cordwood and lumber in recent years for all purposes is estimated very roughly at the equivalent of approximately 9,000,000 board feet.

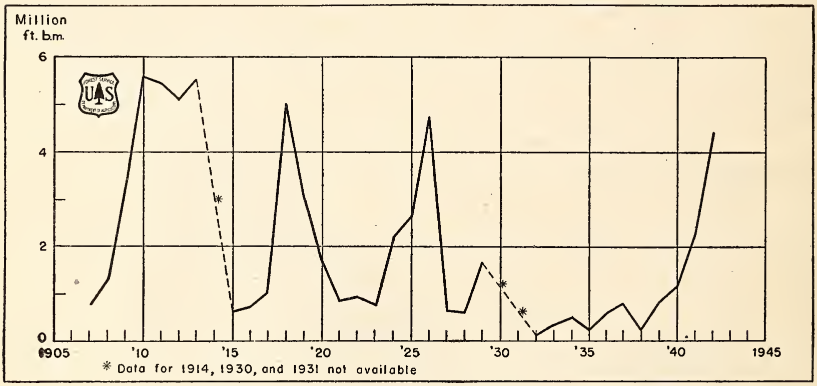

FIGURE 2.—Lumber production of black locust, 1907–42.

Properties.—The heartwood of black locust when freshly cut varies in color from a greenish yellow to a dark brown. After exposure it becomes a russet brown.[9] The narrow sapwood is creamy white. Black locust is very heavy,[10] very hard, and very high in shock-resisting ability. It ranks exceedingly high in strength and stiffness and has a moderately small shrinkage. The wood turns well on a lathe and has high nail-holding ability but is difficult to work with hand tools. It has no distinct taste or odor. Large, clear, straight-grained pieces of black locust are not common as the trunks are frequently limby and more or less crooked and the wood frequently contains holes made by borers, as well as knots and cross grain. Bird pecks cause discoloration of the wood but do not affect it otherwise. The high degree of durability of the heartwood of black locust when used under conditions favorable to decay is one of its outstanding characteristics.

Principal uses.—Black locust, because of its marked durability, is extensively used for fence posts. Other uses in the round, hewed, or split form are mine timbers, poles, railroad ties, stakes, and fuel wood. The principal product manufactured from black locust is insulator pins, for which the wood is well fitted because of its strength, durability, and moderate shrinkage and swelling which tend to keep the pins tight in the cross arms. The bulk of these insulator pins are made from logs and bolts sawed directly into squares from which the pins are turned. The small remainder of the pins are made from squares sawed from lumber. The major part of the black locust lumber, however, is used for rough construction. Comparatively small amounts go into crating, treenails for ship construction, and mine equipment.

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[9] The wood of black locust is often confused with that of Osage-orange (*Maclura pomifera*). A wet cloth applied to black locust will not color appreciably, but when applied to Osage-orange it will turn yellow.

[10] The average weight of black locust in an air-dry condition (12 percent moisture) is 48 pounds per cubic foot.

Table 1 shows the amounts of black locust used in the manufacture of wooden products in 1912, 1928, 1933, and 1940. It includes black locust in the form of logs and bolts, and lumber.

TABLE I.—*Black locust used in the manufacture of wooden products*

[Thousands of board feet]

Class of products	1912	1928	1933	1940
Boxes, baskets and crating			132	178
Insulator pins	[1] 2	9, 242	430	4, 086
Fixtures	1			
Flooring				4
Furniture	2			
Handles	4	1		
Machinery	33			
Sash, doors, general millwork	220	22		12
Ship and boat building	215	8		
Signs, scenery and displays				8
Sporting and athletic goods	1			
Vehicles, motor and nonmotor	110		65	
Woodenware and novelties	51		5	1
Total	639	[2] 9, 273	632	[3] 4, 289

[1] Material in the form of logs and bolts not included in 1912.
[2] This figure is made up of 5,993,000 board feet of logs and bolts, and 3,280,000 board feet of lumber.
[3] Includes 4,101,000 board feet of logs and bolts, and 188,000 board feet of lumber.

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